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Combat Crew

strategic air command

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JUNE 1979

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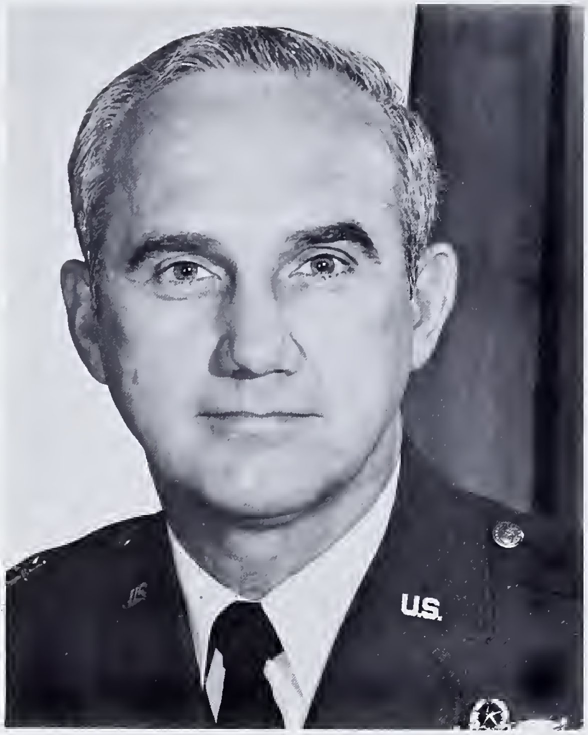

OPERATIONS:

The Good Life

Jack L Watkins
Maj Gen USAF
DCS/OPS SAC

As you drive into the state of Nebraska, the roadside sign reads, "Nebraska — The Good Life," and on the reverse as you leave, "You Are Leaving the Good Life." I feel the same about the SAC operations career field. Of all my military assignments, none has been more rewarding. Operations is where the action is — it's the good life.

Of course, even the good life has its ups and downs. During the 1950s, we entered the all jet age and things were humming. SAC crews set new flight records almost every year. On the missile side of the house, SAC was giving birth to a new era; progressing from the Thor and Snark to the Atlas and Titan, the missile age had arrived.

In the early 1960s, except for reconnaissance activity which was on the increase, SAC crew duty for both air and missile crews became somewhat routine. Alert tour followed alert tour, interspersed with training missions and professional study. Aircrews were occasionally treated to 24-hour airborne alert sorties to break the 8 to 12-hour training missions. Missile crews could enjoy driving 100-150 miles for a 24-hour alert tour 8 to 10 times a month. During winter months these tours were often extended when a blizzard made roads impassable. The young officer entering the crew force could look forward to 10 to 12 years of aircrew duty or 3 to 4 years missile crew duty before having an opportunity to enter the staff or other career areas. In short, crew duty was not always challenging.

Vietnam changed everything. Our recce crews were operating before the battle began. Then, our tanker crews entered; refueling just about anything you could stick a boom into and in just about any condition imaginable. When the bombers deployed in 1965, a new way of life that would last for over eight years had begun for SAC aircrews. What began as an exciting and rewarding job, and peaked with the awesome raids over North Vietnam in December 1972, eventually ended in long periods of TDY, routine missions and a gnawing fear their contemporaries were leaving them behind in their Air Force careers. Our leaders remember those painful years of post-Vietnam recovery. On the brighter side, in the mid 70s USAF Reserve and Air National Guard forces converted to the KC-135, providing welcome relief for our heavily tasked KC-135 crews. For missileers, the last Minuteman complexes were being completed in the late 60s and the missile force continued to grow in numbers and experience.

Today, I believe the operations career field in SAC is the best job in the Air Force. Granted, except for recce, air and missile duty are somewhat routine but routine should not and need not be boring. At the headquarters, we are constantly striving to develop new ideas and initiatives aimed not only at getting the most out of our rapidly dwindling resources, but also at job satisfaction. At the unit level, DOs should lead the way, promote new programs, foster new ideas and provide feedback on how things are going. We established the head-

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quarters DO conference to enhance our operations programs by getting all DOs together for briefings and discussions. The payoff has been and will continue to be betterment of SAC operations with SAC and you, the crew member, reaping the benefits.

During the last year, we have initiated or expanded several programs aimed at improving our capabilities and making SAC operations an enjoyable and rewarding career. The SAC Alert Force Panel was created to improve the manner in which you spend roughly one-third of your crew life. RED FLAG participation was greatly increased; training missions in Canada, England, Europe, and Guam were instituted; and short event oriented sorties began to replace the long profile mission format. We are in the conceptual planning stage for establishing a SAC Strategic Training Center where aircrews will receive short, intensified and highly diversified ground and air training. We have pushed for and are getting new equipment to improve our capabilities. The avionics in both bombers and tankers will soon be updated with new inertial systems and weapon system simulators are being procured to replace older ground training devices. New reconnaissance sensors are being developed along with additional roles oriented toward tactical support. We are working hard to gain approval for a modernized Titan II missile procedures trainer. A major modification program to the Minuteman is nearing completion and we are in the review process for the M-X missile system.

These are only a few of the things being done. But these are not enough. We need your help and your ideas! Talk with your DO, give him your ideas to work or pass along. Together, we can turn the routine into the exciting. Operations is the good life — let's make it better! ★★

Combat Crew

Magazine of the Strategic Air Command - 29th Year of Publication

GEN. RICHARD H. ELLIS
COMMANDER IN CHIEF, SAC

BRIG GEN RICHARD A. BURPEE
Inspector General

COL. BURR V. MILLER, JR.
Director of Safety

STAFF

MAJ. STEPHEN J. MILLER
Editor

G. FRANCIS FARRELL
Associate Editor

SSgt. RICHARD L. WALDROOP
Art Editor

MARY JANE ABBOUD
Editorial Assistant

FLARE

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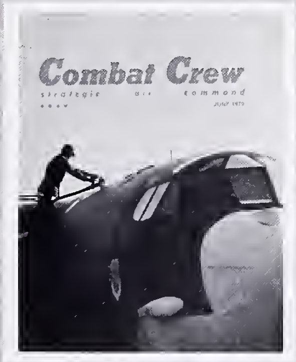

ON OUR COVER

A B-52G in final phases of preparation for another "Safe" mission by the 19th BMW. For their story, see page 4.

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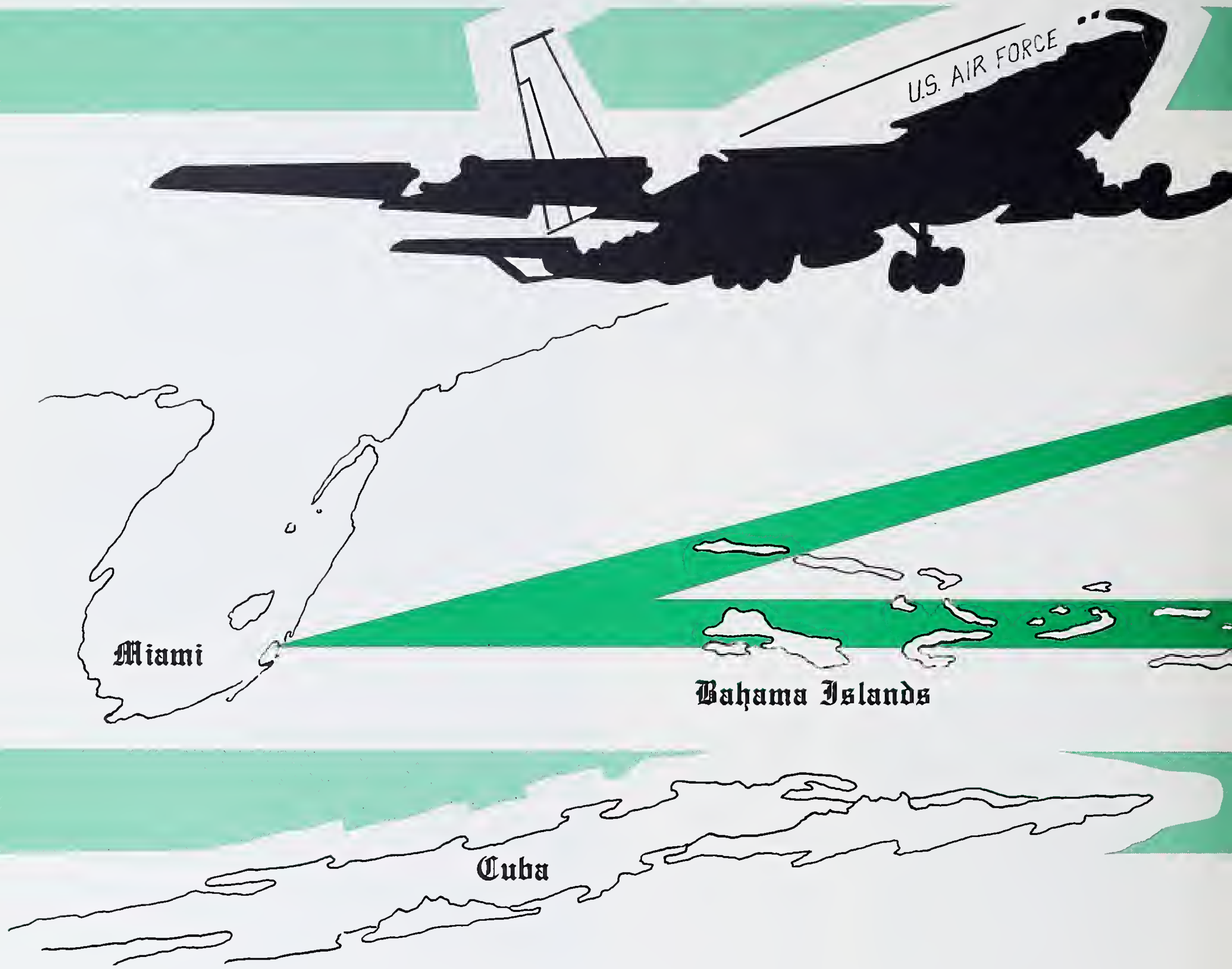


28 August 1963. The morning hung heavy with the haze as the crews reported to Base Operations. The hint of mugginess portended another day of high temperature and humidity. But it was comfortable in the early dawn hours as the crews completed the preflights of their KC-135s. There was nothing that distinguished this day from any other. At 0815 EST, aircraft 61-0319 and 61-0322 took off for the last time.

The cell departure went as planned as did the rendezvous with the receivers, 3 B-47s on redeployment. At 1201 EST, the five aircraft neared completion of the refueling and PRY 38, the lead tanker, checked in with Miami Oceanic with an hourly position report. The weather was clear, and the flight was encountering no problems. Fourteen minutes later, the tankers left the cell and bade farewell to the bombers. It would be the last transmission ever received from PRY 38 and PRY 41.

The Legacy of the TRIANGLE

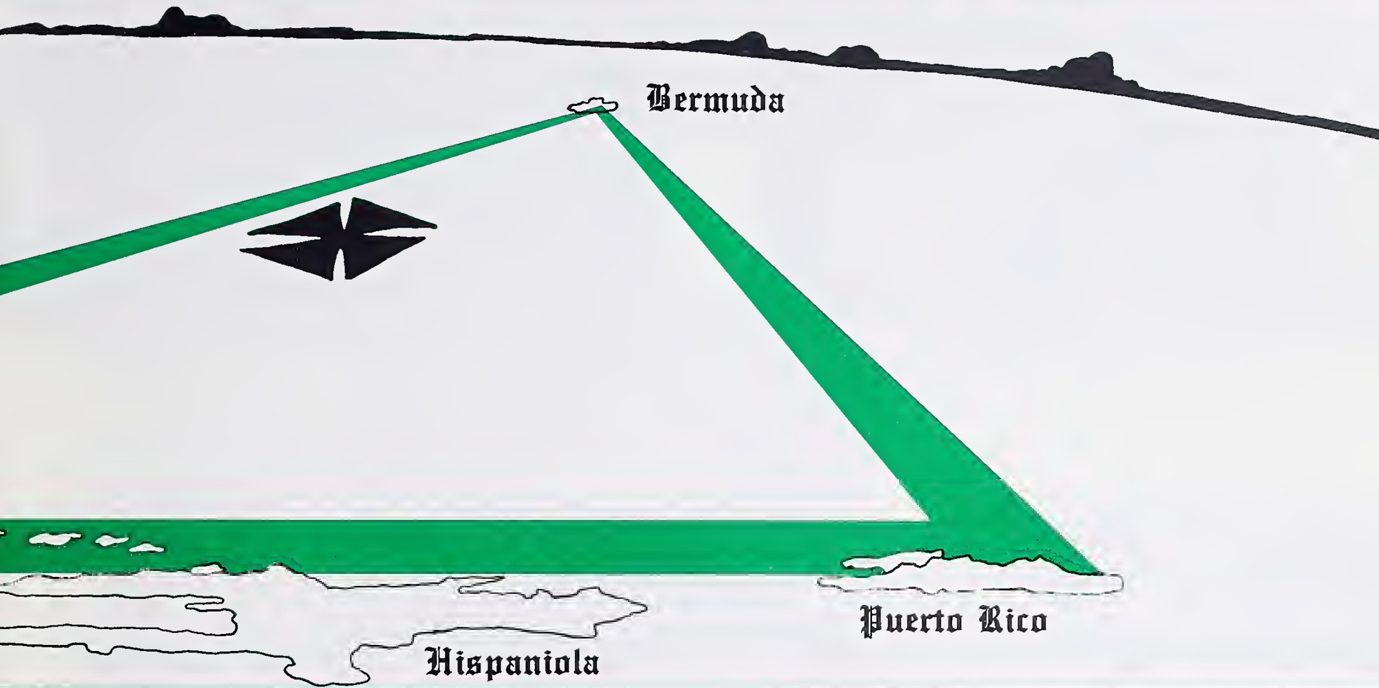


Illustration by
Maj Walt Marshaleck

At 1307 EST, Miami Center notified the 19th Bomb Wing Command Post of the overdue aircraft and an extensive air and sea search was begun. Three hours later, a Coast Guard cutter found the debris. Enough wreckage was recovered to assume that both aircraft crashed in close proximity. The bodies of the eleven crewmembers were never found. Two more aircraft, the first jets to be lost in the Bermuda Triangle, had been claimed by the unknown. What caused two aircraft, flown by highly experienced crews, to collide when the weather was clear and was supposed to be a mile separation maintained between the two tankers? The accident board could never decide. The only solution to the mystery lies hidden in the depths of an area that continues to claim its unwary victims even today.

But the legacy which has been passed down since that fateful day almost sixteen years ago includes a history of continuous mishap free flight; an enviable record equaled by few units in Air Force history.

In 1968, the 19th Bomb Wing designation was moved from Homestead AFB to Robins AFB, Georgia. The record of safe flight, begun five years before, continued. And now, almost eleven years later, the 19th Bomb Wing nears the completion of its sixteenth year without a major aircraft mishap. The legacy continues today.

How has a record like this come about? Luck? Certainly to some degree. But it's impossible to stay lucky for almost sixteen years. There has to be something more tangible.

Colonel D. O. Pflugrath, the 19th Bomb Wing Commander, readily identified one tangible — quality people. "They are definitely the key to our outstanding record. Their day-to-day dedication and involvement in operations, and maintenance and security is as complete as I've seen. Our safety

No job is routine at the 19 BMW. When it comes to safety, every-one is constantly on the alert for potential safety problems.

Capt Charles W. Iffland, 28 BMS, inspects the B-52G for any unusual problems prior to flight.

For the 912 ARS, safety begins with mission planning. Capt Kenneth P. Daigle, 1Lt Charles M. Seigler and 1Lt Roberto J. Garcia prepare for an up-coming mission.

Safety on the flight line at Robins is monitored by all of the people assigned to the 19th Bomb Wing.

The 19 BMW maintenance people have played an equal part in maintaining the outstanding flying safety record.

record belongs to each member of the wing, because without the continuing effort of everyone, our safety program would not have been as effective as it is."

What makes a flying safety program work? As the wing flying safety officer, I feel education is the key. You can't preach safety to people anymore; they're too sophisticated for the old approach. You have to tell them something new, and present it to them in a way that they haven't seen before. If you can get someone's attention and hold it, the chances of getting your point across really increases. For example, I've given briefings on crash survival and human factors which included things like eye limitations, sensory perceptions, and the effects of stress on tasks performance. By using people from the audience and trying to entertain them, I can form a bond which allows me to get the point across more effectively. If I can get people to say "I didn't know that" or "I never looked at it that way before," then I know I've succeeded in making my point.

The Safety Division originated several innovative programs to promote flying safety. They combined their Mid-Air Collision Avoidance Program with a highly effective Airport Visitation Program. Major Walter A. Marshaleck, Wing Chief of Safety commented "We have personally delivered our Mid-Air Collision Avoidance brochure to all of the fixed-base operators around Robins. In addition, we mailed copies of the brochure to every aircraft owner in the Middle Georgia area. Since we are so close to Atlanta, and with Macon's Airport five miles off our departure runway, the threat of a mid-air collision is always a possibility. Our program is an on-going one to try and make all pilots, military and civilian alike, aware of this problem in the hope that we can prevent it from becoming a reality." The Safety Office, assisted by the 912th Air Refueling Squadron, developed an Airfield Familiarization Program which is a slide-sound briefing designed to acquaint new crewmembers with the unique problems associated with flight operations at Robins. It is included in the 19 BMW's Newcomers Orientation Briefing which was developed jointly with the 912 ARS and 28 BMS training flights.

In this way, incoming personnel receive safety orientation training concurrently with their local check-out.

The 19th Bomb Wing has received numerous awards contributional to their record of safety excellence. The Wing Flying Safety program received the only "outstanding" rating given to a flying safety program by the SAC Inspector General and followed it with another "outstanding" rating in 1979. The 19th OMS was named as the best Organizational Maintenance Squadron in Eighth Air Force and the 19th Munitions Maintenance Squadron's Maintenance and Storage Branch was selected as the best in SAC. But the highlight of the past year occurred when the 912 AREFS received the Air Force Golden Boom award and prestigious Carl A. Spaatz Memorial Air Refueling Trophy as being the best refueling unit in the Air Force in support of Tactical Air Forces. This trophy is symbolic of the outstanding professionalism and dedication of every individual in the wing.

When all is said and done, our safety record belongs to the people. "The hundreds of thousands of accident-free flying hours are a direct tribute to

(Continued on Page 23)

YEAR of the TITAN

LAUNCH CONTROL AND MONITOR
READINESS CONTROL AND MONITOR
FACILITIES CONTROL AND MONITOR

Members of the 390th Strategic Missile Wing at Davis-Monthan AFB, have plenty to cheer about as they earned the title of the "Best of the Best" after winning the Blanchard Trophy in the Strategic Air Command's missile combat competition.

Out in front from the first day of exercises in the Strategic Air Command's 12th Missile Combat Competition, was the 390th SMW from Davis-Monthan. The Arizona based Titan missile wing took the first day lead by posting the highest composite maintenance, communications, and civil engineering scores.

Davis-Monthan's score also placed them ahead of the other two Titan wings in the competition with a 91.7 overall percentage total for the Best Titan Wing trophy.

In second place for the Best Titan Wing on the first day was the 308th SMW, Little Rock, with an 87.2 percentage total. The 381st SMW, McConnell, followed closely with an 85.7 percentage total.

The Best Minuteman Wing after the first night's score postings was held by the 341st SMW, Malmstrom. The unit compiled an overall percentage of 89.4. This also placed them second for the coveted Blanchard Trophy. The second place Minuteman leader was the 321st SMW, Grand Forks, with an 88.5 percentage total. The 91st SMW, Minot followed with an 84.6 percentage total. The Minot wing won the Blanchard Trophy last year.

On April 27, one night prior to the first score posting, Lt. Gen. Lloyd R. Leavitt, Jr., vice commander in chief of the Strategic Air Command, opened the 12th Missile Combat Competition by

(Continued on Page 16)

LOW TO THE GROUND . . . AT NIGHT . . . ONE-ELEVEN STYLE

Captain Jim Forman
529 Bomb Sq., Plattsburgh AFB

"I have a ridge at eight miles, that lake is at three, and the hill is filling in."

"The aircraft is starting to descend, I see the lake now, but not the ridge."

"The ridge is one mile, should be starting to climb, not painting behind it."

"Starting to climb now."

"It's filling in. That high terrain should be about ten miles and on the scope shortly. Nothing significant on the scope now. High terrain at six miles. Four miles with a big shadow."

"Starting to pick it up, starting to climb."

"Two miles and still a shadow."

"Still climbing. Clearance looks good. Climb looks good."

"One mile and filling in, painting returns over."

"Starting down, nothing big on the scope."

The preceding dialogue is five minutes during a low level flight in the FB-111. Weather is 200 broken, 500 overcast, visibility one-half mile with snow and snow showers. The time is 2330 local on IR 800. The altitude is 400 feet at 480 knots. The mission is night TFR.

The FB-111 has always had the capability for flying night IFR terrain following radar (TFR) missions. SAC started a checkout program to qualify all mission ready crews in night/IFR TFR in July 1978.

The goal was to transition from day TFR to the night environment. We all knew how to fly TFR in the day, but night was flown strictly at IFR altitudes. Most aircrews had developed a TFR flying technique wherein the external visual scan detracted from the cockpit displays and proper TFR crew coordination. Not only does this breed a lack of familiarity with the displays, but also a dependence on external visual cues that must be suppressed or unlearned to insure effective mission accomplishment when flying in actual IFR/night conditions or with thermal curtains closed.

Crew coordination plays an integral part in flying TFR in the FB-111. The E scope, attack radar, LARA (low altitude radar altimeter), computers, INS, all aid in making the flight workload less, but it takes proper use and understanding of the equipment to make flying that fast and that low, a safe operation.

Proper crew coordination fills the gap left by the loss of visual cues under conditions of night, IFR, or closed thermal curtains. Terrain warning, provided by the navigator from the attack radar interpretation or by the pilot from the E scope displays, are used to insure proper TFR operation and avoid ground hazards. Proper monitoring of the TFR warning and caution lights must be included to supplement the terrain warnings. Additionally, normal aircraft systems monitoring must take place.

In the checkout program, an academics class was first on the agenda. We all knew how the equipment worked so it was just a refresher course. WRONG! Parts of the avionics "Magic Show" that weren't really important before, became extremely popular items of interest. "What does it mean when this happens?" and "I didn't know that," became com-

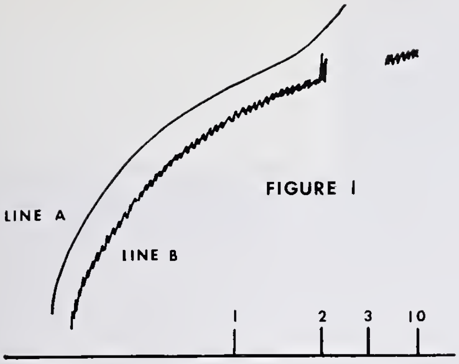


FIGURE 1

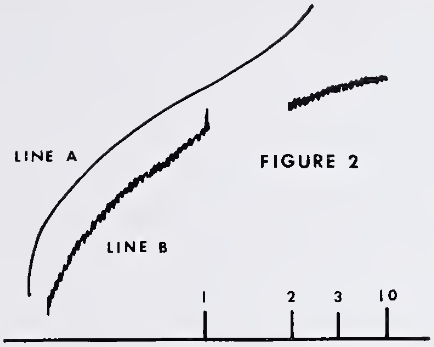


FIGURE 2

mon classroom expressions during the exchange of information. Academics included TFR system and procedures, E scope and attack radar interpretation, crew coordination, bird strike and checklist procedures, and safety considerations.

A mission in the weapons system trainer concluded the academics portion. Random conversation ceased as a new parade of hills, lakes, ridges, and other imposing terrain marched across the scopes. Little hills that we had disregarded in the daytime, turned into mountains in the electronic environment. A dialogue similar to the one beginning this article began to take shape in the simulator mission. Primary and secondary areas of concentration were set down to help share the increased workload.

Obviously, a close interlock of aircrew functions has occurred! Does this mean that everybody is watching everything at all times? Of course not. The heaviest load for each will be in the primary areas. It does mean that efficiency will only occur by assisting the other person in the cockpit. A "lone wolf" may be a "dead wolf."

The flying phase of the program consisted of three sorties, two with an instructor and then the crew solo flight. IR-800, starting in Maine and ending in New York, was used for the low level route. Its mixture of terrain, length of route, and the mid-route climb to IFR altitude offering a short break from the demanding TFR flying, offered an excellent training environment. By the third ride, the surprises had declined to an acceptable level. More route study, better scope interpretation and developing increased crew coordination make the rides almost enjoyable. During the first 12 rides the aircraft is flown at 1000 feet with full navigation systems. The lucky 13 mission is flown at minimum route altitude, usually 400 feet, with degraded navigation systems. However, flying safety is paramount.

What about aircraft malfunctions? The best rule is, Climb to MEA and Analyze. *Only during critical action emergencies, is an immediate action required without reference to aircraft altitude. Even in that event, an immediate climb can be initiated while simultaneously doing the emergency procedure. Under these conditions, terrain clearance is your best friend. First priority is to obtain and maintain complete aircraft control at a safe altitude.*

The night/IFR TFR program has really paid off. A Red Flag exercise requiring night/IFR TFR missions was completed at the end of August 78. The first night/IFR TFR Buy None was accomplished in December 78 with outstanding bombing results. Training has increased during the long nights and bad weather during the winter months. Both day and night TFR proficiency has increased along with better understanding of aircraft systems and flying safety. During Red Flag in January, the FB-111 showed what it means to be an all-weather low level penetrator. When everybody else stayed on the ground for the bad weather, the FB-111 took to the skies and completed the mission.

Note: The italics are portions of the handout, TFR OPERATIONS, CREW TECHNIQUES, prepared by Lt Col Michael F. Jacobs, IFR/night TFR project officer.

E Scope

The illustration shows the aircraft approaching a hill over level terrain. The TFR antenna scans in a vertical pattern relative to the aircraft fuselage reference line (FRL). The scan is eight degrees above to 32 degrees below the FRL. The bottom axis of the scope is not linear. This axis is an "E Squared" scale representing 10 miles slant range in front of the aircraft and gives an expanded presentation of objects close to the aircraft.

Line A is the Zero Command Line. This is the graphic display of the selected combination of ride and clearance plane setting. The line should be smooth and continuous with no abrupt features. It must react to ride and clearance plane setting changes.

Line B is the Terrain Trace. This display should be present on the E scope at all times over radar reflective surfaces at normal operating altitudes. As altitude is decreased more detail is apparent due to the radar look angle and vertical surfaces which cast significant shadows or create "breaks" in the display. Interruption of the type of terrain is based on whether it is horizontal (high terrain) or vertical (low terrain).

Figure 1 shows the high terrain break at two miles. Figure 2 shows the high terrain at one mile. As the aircraft approaches inside of one mile the terrain trace (Line B) will begin to join to indicate terrain clearance.

Tanker to the Rescue

Captain John L. Waid
904 AREFS

Search and rescue efforts are definitely not part of the normal tanker mission profile. These kinds of missions belong to C-130s and helicopters, the kind of things we see in SAC Crew Training tapes. Yet, a 904th AREFS crew was called upon recently to cover a crash survivor and direct the rescue effort. The crew combined thorough professionalism with the procedures they had practiced on countless training missions to accomplish this most unusual objective.

Although the mission Crew R-116 planned was much like any other, there were a few wrinkles. They were going to refuel F-100s and F-105s in support of Operation Red Flag which required probe-and-drogue procedures. After refueling the nav would be flying his first preliminary navigation leg in the 1978 Giant Voice competition. Despite these special considerations, the day promised to be fairly ordinary.

The preflight went smoothly and the takeoff and climbout were uneventful. Things were going smoothly while cruising to the refueling area until the crew received word that an A-7 had collided with an F-106. The F-106 made a safe recovery, but the A-7 pilot ejected from his aircraft. The E-3A AWACS controlling Red Flag operations that day terminated the scheduled refueling. However, an F-4 covering the downed A-7 pilot was running low on fuel. Unfortunately, the attached drogue precluded giving any gas to the F-4, so the tanker was diverted to cover the survivor.

The A-7 pilot landed in a valley, and the only way to locate him was to descend to a very low altitude and slow down as much as possible. Now tankers normally perform a descent when penetrating to a landing, and mostly at home base; but bringing a 220,000 pound airplane from 25,000 feet down into a valley surrounded by mountains, while routine for a bomber, is something else again for a tanker. So the crew applied the day-to-day procedures they had practiced during countless penetrations to make the descent safely.

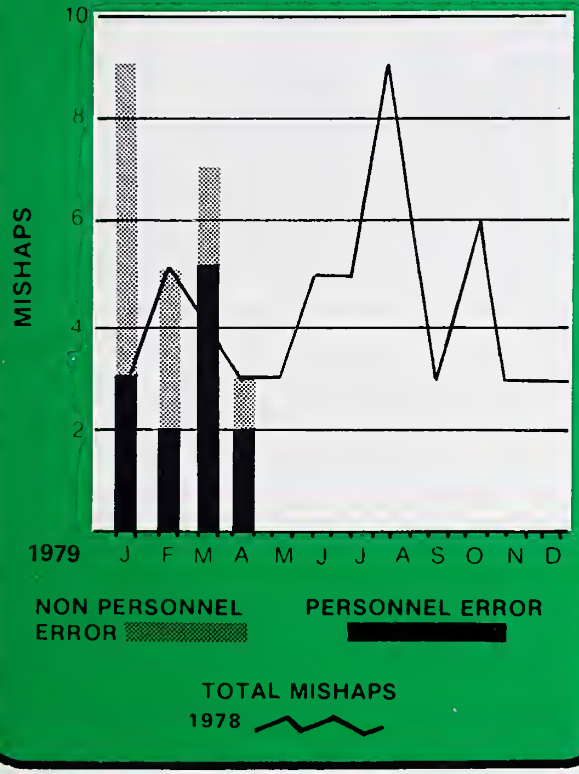
The pilot concentrated on flying the airplane while the copilot not only had to maintain visual clearance but also had to talk to the survivor, the F-4 pilot, the E-3A, controllers and the incoming rescue forces. The navigator backed up the pilot on his altitudes and kept up his visual scanning while the boom operator attempted visual location from the pod. The F-4 pilot joined on the descending tanker and led the way to the crash site. The F-4 then departed for home with minimum fuel.

After orbiting for a few minutes, the navigator spotted the survivor's parachute. The copilot then made contact with the downed pilot and asked where he was in relation to his chute. The downed pilot replied that it was hot down there, he was under it. He had some minor injuries but was otherwise all right. The tanker continued to orbit for an hour or so. During that time, the E-3A identified the tanker on his radar, and had the tanker make an RBS run, tone and all, on the pilot to pinpoint a position. The E-3A was then able to give the rescue helicopter precise vectors allowing Rescue to make visual contact with the survivor immediately upon entering the valley. The tanker remained in the area long enough to determine that the downed pilot had been rescued, then climbed out and proceeded with the scheduled mission.

Most often a tanker's mission acquires unusual aspects only when flown into a strange field where conditions are different from those to which the crew is accustomed. Yet, conditions are so similar that a descent into one field is pretty much like a descent into any other. A descent into a valley and orbiting for an hour at 1000 feet above the ground are quite something else. Crew R-116 amply demonstrated that the procedures that we often regard as routine, when applied to a special mission, will facilitate the successful accomplishment of that mission. In this case, good crew coordination and strict adherence to the prescribed procedures, all things that we routinely practice, enabled one crew to do something completely different. Through their efforts, a crewmember who might have had to wait for hours for rescue forces to locate him was speedily recovered and flown to a hospital for treatment. **Crew R116 from the 904 AREFS included: P Capt John Urce, CP Capt Phillip Huffman, N 1Lt Alan Langemak, and BO SMSgt John Sondrini.**

Missile Mishap Report

DOD CLASS A, B and C



DAMAGED SRAM BOOSTER SECTION

A SRAM booster section received from depot failed level one test no. 8210. The electronic shell was removed and revealed damaged wires. During the investigation by the weapons safety officer, a damaged nozzle closure seal was also found. Damage to the closure seal could not be determined but the wire damage appears to have resulted from a thread tap that was used to clean up the threads in the shell nut plates. It penetrated the nut plates and cut into the wiring. The booster section was returned to depot for repair and determination of what procedures or actions are necessary to preclude recurrence.

DAMAGED LF ANTENNAE

Two recent mishaps involved vehicles coming into contact with missile site antennae. A field maintenance team chief backed his special purpose vehicle toward the launch facility support building. Instead of using a spotter, he backed the vehicle using only the exterior mirrors. The top of the vehicle struck and damaged an antenna "banjo" cover and shell. The second mishap occurred during snow removal at an LF. A civil engineering team arrived on site at 1430 to clear eight feet of snow. When darkness approached at 1700 the site lights and two of the front end loader's lights were found to be nonoperational. The team continued snow removal to support mission requirements. At approximately 2330 the operator of a front end loader was backing, with a spotter, out of the launcher closure rail area via a drainage ditch. As the front end loader started up the incline, it slipped on compacted ice and slid down the incline, striking the radome face with the bucket of the loader. The vehicle was using only one set of chains due to fair wear and tear having made chains scarce. Local purchase of replacement chains was not possible due to exhausted supplies.

This is a classical mishap in the sense that it resulted from several minor problems (assumed) that culminated to cause a reportable mishap. The team had been dispatched at 0745 so their total time on duty was 15 hours, 45 minutes; the weather conditions were severe (temperature –30° F. with deep blowing snow). Site lights were out, and the vehicle was operating with only one front and one rear light. The vehicle was equipped with only one set of chains instead of two.

The decision to clear the site to support mission requirements is not debatable as all factors at the time had to be weighed. However, to reduce the risk of having a mishap, the following should have been considered: advance planning to insure equipment levels are adequate for the most extreme environmental conditions; all vehicles and equipment mechanically complete and operating correctly; insure all facilities such as lights, communications, drains and surfaces are maintained as designed. Now, while the memories of this year's winter are still fresh, is the time to start planning for next winter's operations.

A DOUBLE STANDARD

Capt Charles S. Romes and Capt John R. Moock
Central Flight Instructor Course Instructors
Castle Air Force Base, California

Have you noticed that there seems to be a double-standard in existence throughout today's crew force? At times there seems to be two separate sets of values, or levels of performance, that we subscribe to. One set gets us through our normal refueling, bomb run or transition and one set is reserved for our annual SACR 60-4 evaluation. Herein lies the problem. Many of our CFIC instructor candidates come to us with the feeling the yearly evaluation is the primary concern and the professional quality of day to day flying is not too important. Why does this feeling exist?

First of all, the pressure of possible failure during the annual check ride is fairly high. Nobody likes to take a check ride; we don't like to be told what we did wrong. We tend to dread flying with an evaluator, and we don't normally perform at our best under this pressure. We tend to equate some of the "nit noy" procedures with evaluations. It is of course natural to rebel against the pressure of a check ride by "sluffing off" on some of the procedures when we don't have someone looking over our shoulders. Now we have a double-standard.

The problem seems to emanate from the "difference" between evaluation flights and instructional or training flights. Today we will discuss evaluation and instruction and their similarities. We will also look at some of the problems and see if we can work on getting a little relief from the temptation to use a double-standard.

According to SACR 50-6, *Standardization and Evaluation Concepts and Techniques*, evaluation is defined as "The process of determining if personnel assigned to accomplish the tasks can do so in the manner specified." The regulation goes on to say that the "evaluation of performance must be done using objective methods, valid measurement criteria, and adequate scoring/grading tools." To be able to objectively evaluate something, a list of criteria must be established to use as a reference. Hence we have SACR 60-4. It would be nice and convenient for an evaluator, when administering a check, to be able to compare a person's performance with a list of criteria (grading maze) and come up with a grade. However, very few check rides, if any, are simply black & white; most areas are gray and the gray areas all require evaluator judgment. It is not easy to evaluate areas that are often subjective in nature in terms that are objective. As can be expected problems come up. The coldness and finality of the objective terms leave most of us a little miffed and an animosity develops toward evaluators.

How does the spirit of evaluation differ from the spirit of training? The Air Force does not come right out and define instruction, however, their definition of training in AFM 50-62 says, "training is the factor of management that insures standard procedures, overall efficiency, and mutual understanding." We at CFIC feel that this definition ties in very well with the spirit of the Standardization/Evaluation Branch. Both evaluation and instruction are generally aimed at the same goals.

Instruction or training is normally a three day cycle, the mission planning and pre-brief day, the day of the flight, and the critique day. Since the critique phase is nearly the same for an instructional flight as it is for an evaluation we'll discuss the critique in a little more detail. We think instructors and evaluators will agree that the purpose of the critique is to improve crewmember performance. The instructor uses the critique to "provide constructive advice, direction and guidance to students" in order to improve performance. The evaluators guidance regarding the critique takes a slightly different slant. SACR 50-6 says that "the goal of the critique is to insure that the evaluatee understands the desired level of performance." It goes on to say that "the idea is to point out errors and present solutions," and in that sense it is similar to the instructor's critique. Both evaluators and instructors use the critique to reinforce learning. The effective critique

(Continued on Page 30)

1978 Safety Award Winners

The SAC recipients of USAF safety plaques for calendar year 1978 are . . .

FLIGHT SAFETY PLAQUE

6 SW, Eielson AFB
42 BMW, Loring AFB
43 SW, Andersen AFB
380 BMW, Plattsburgh AFB
416 BMW, Griffiss AFB

MISSILE SAFETY PLAQUE

42 BMW, Loring AFB
416 BMW, Griffiss AFB
44 SMW, Ellsworth AFB
90 SMW, F E Warren AFB
321 SMW, Grand Forks AFB

NUCLEAR SAFETY PLAQUE

42 BMW, Loring AFB
43 SW, Andersen AFB
319 BMW, Grand Forks AFB
341 SMW, Malmstrom AFB
4235 STS, Carswell AFB

EXPLOSIVE SAFETY PLAQUE

1 STRAD, Vandenberg AFB

Congratulations to all the winners!

YEAR OF THE TITAN

(Continued from Page 9)

saying:

"Missile competitions are a part of a long tradition of demonstrating military prowess in peacetime under conditions that simulate battlefield stress. In the space age we meet at Vandenberg to decide which wing of modern warriors is really number one.

"Never before in history has there been weapon systems to compare with the strategic missile force in readiness, in reliability and in accuracy. But Olympic Arena shows that hardware alone is not enough. A missile without a trained and competent crew makes little contribution to our defense. It is the combat crews, the maintenance, security, civil engineering, and communications teams who make the intercontinental ballistic missile what it is today, the centerpeice of our strategic TRIAD . . . the bottom line in our deterrent policy, the hidden emphasis in our motto: Peace is Our Profession . . ."

At the midway point in Olympic Arena, and on the second night of score posting, the 390th SMW still held the lead for the Blanchard Trophy. After just two days of competition, Davis-Monthan Titan competitors had tallied 1472 points, 92% of the possible score in their completed exercises. In second place, only 1.6% behind was the 321st SMW, Grand Forks.

Lt. Gen. Lloyd R. Leavitt, Jr., Strategic Air Command vice commander in chief, addresses the competitors during the opening ceremonies of Olympic Arena

Commanders of the nine missile wings competing in the 1979 missile combat competition draw envelopes containing competition schedules from the Blanchard Trophy. From left are Colonels Nathan Hartman, 390th SMW; Charles H. Greenly, 90th SMW; Charles L. Lipscomb, 91st SMW; Howard R. Tarleton, 44th SMW; Gary E. Marsh, 308th SMW; Elmer T. Brooks, 381st SMW; Ralph E. Spraker, 351st SMW; Kenneth L. Holden, 321st SMW; and Allen K. Rachel, 341st SMW.

Davis-Monthan managed to stay in first place when both of their operations teams turned in identical 276 point scores out of a possible 300 points. Also, at the end of that day's competition, the 381st SMW, McConnell, overtook the 308th SMW, Little Rock, in the standings for the Best Titan Wing. Grand Forks took the lead for the Best SAC Minuteman Wing. Dropping to second place by only one percentage point in the Minuteman race was the 341st SMW, Malmstrom.

After three days of intensive competition among the nine Minuteman and Titan II ICBM wings, the 390th SMW landed top honors by amassing 2757 points out of a possible 3000 to win Olympic Arena '79. So, for the first time in the 12-year history of the Strategic Air Command Missile Combat Competition, the prestigious Blanchard Trophy will reside with the 390th Strategic Missile Wing.

Winning Best Minuteman Wing Honors was the 341st SMW, Malmstrom AFB. The Montana wing also finished in second place overall, trailing the winner by only 42 points.

The Davis-Monthan competitors also won Best Titan Wing, Best Operations Crew, and Best Titan Crew honors. In addition, they take back to Arizona the trophies for Best Titan Communications Team, Best Titan Security Police Team, Best Titan Munitions Team, Best Titan Propulsion Team, and Best Titan Missile Maintenance Team. They also garnered the Air Force Association's award for Best Titan Operations, and the Air Force Logistic Command Trophy for Best Titan Logistics.

In addition to their standings as top Minuteman wing, the Malmstrom AFB unit won awards for Best Maintenance, Best Minuteman Power/Pro Electric Team, and Best Minuteman Munitions Team. The 341st SMW also will carry home the Air Force Logistics Command Best Minuteman Logistics Trophy.

The 321st SMW, Grand Forks AFB, finished third overall winning five categories: Best Operations, Best Minuteman Crew, Best Minuteman Missile Maintenance Team, Best Minuteman Communications Team, and the Air Force Association award for Best Minuteman Operations. Little Rock AFB, finished fourth overall. They won Best Titan Facility Team and Best Single Operations Crew Exercise. The 381st SMW, McConnell AFB, won the trophy for Best Titan Electronics Team. The 91st SMW, Minot AFB, took the awards for Best Security Police Team, and Best Minuteman Security Police Team. The 44th SMW, Ellsworth AFB, won the Best Civil Engineering Team, and Best Minuteman Electrical Team honors.

Only 245 points, on a base of 3,000, separated the first place winner from the last.

On the last day of the competition activities General Richard H. Ellis, CINCSAC, lauded the Olympic Arena Winners and other competitors as he presented trophies at closing ceremonies May 4.

Olympic Arena Winners

Best TITAN Wing (3000 possible points) — 390 SMW	2757
Best MINUTEMAN Wing (3000 possible points) — 341 SMW	2715
Best Missile Operations (1200 possible points) — 321 SMW	1090
Best Missile Crew (600 possible points) — (S-100) — 390 SMW	550
Best MINUTEMAN Crew (600 possible points) — (S-172) — 321 SMW	548
Best TITAN Crew (600) possible points) — (S-100) — 390 SMW	550
Best Missile Maintenance (1200 possible points) — 341 SMW	1147
Best TITAN Propulsion Team (300 possible points) — 390 SMW	272
Best TITAN Electronics Lab Team (300 possible points) — 308 SMW	294
Best TITAN Facilities Team (300 possible points) — 390 SMW	299
Best TITAN Munitions Team (300 possible points) — 390 SMW	290
Best MINUTEMAN Electro-Mechanical Team (300 possible points) — 321 SMW	293
Best MINUTEMAN Electronics Laboratory Team (300 possible points) — 341 SMW	292
Best MINUTEMAN Refrigeration Team (300 possible points) — 341 SMW	293
Best MINUTEMAN Munitions Team (300 possible points) — 341 SMW	270
Best Missile Security Police (200 possible points) — 91 SMW	187
Best TITAN Security Police Team (200 possible points) — 390 SMW	183
Best MINUTEMAN Security Police Team (200 possible points) — 91 SMW	187
Best Missile Communications (200 possible points) — 390 SMW	195
Best TITAN Communications Team (200 possible points) — 390 SMW	195
Best MINUTEMAN Communications Team (200 possible points) — 321 SMW	189
Best Missile Civil Engineering (200 possible points) — 44 SMW	187
Best MINUTEMAN Civil Engineering Team (200 possible points) — 44 SMW	187
Best TITAN Civil Engineering Team (200 possible points) — 381 SMW	163
Best Single Crew Exercise (600 possible points) — 308 SMW	548

OPS—UP-DATE

HQ SAC DCS/OPS

MAJOR GENERAL JACK L. WATKINS

Congratulations OLYMPIC ARENA 79 winners and best wishes to the SAC team bound for the United Kingdom to participate in the 1979 RAF Strike Command Bombing Competition. — Jack Watkins

DIRECTORATE OF COMMAND CONTROL, SPACE & SURVEILLANCE — COLONEL CLARENCE R. AUTERY

AIRBORNE LAUNCH CONTROL SYSTEM (ALCS). An ALCS capability is resident aboard EC-135 A, G, and C aircraft as well as the E-4B. These aircraft are capable of launching the entire force of Minuteman missiles. The 2nd Airborne Command Control Squadron (ACCS) at Offutt AFB NE and 4th ACCS at Ellsworth AFB SD, are responsible for their operation. Each month one aircraft is flown over Hill Engineering Test Facility (HETF) in Utah to fulfill a variety of test objectives. The HETF is home base for several computerized, simulated missile launch facilities (LFs) which retrieve electronic data transmitted from the aircraft and process and store it for later analysis by Hill AFB and SAC personnel. Testing has identified and helped correct weapon system abnormalities and has refined ALCS crew procedures. If you're an 18XX interested in ALCS, call HQ SAC/DOCAL, AUTOVON 271-2757. (Maj Frank Hale, DOCAL)

EMERGENCY ACTIONS. Have you ever been curious about where SIOP emergency actions procedures and checklists came from, or who in SAC Headquarters was responsible for developing the SAC/IG situation tape exams? The procedures, checklists, and exams are all developed and written by the HQ SAC Emergency Actions Division of the Directorate of Command Control, Space and Surveillance. There are three missile specialists, one command post controller, and one aircraft specialist. These five individuals are responsible for SAC Command Control procedures. They start preparing "revisions" eight months before the date of the revision. In order to have the material at the unit early enough to allow for training, they must have the procedures and checklists in final form over three months before the revision date. The IG exams are prepared after the regulations are released for distribution. These exams are designed not to trick you, but to find out if you, the crew member, can do your EWO job. If you have an idea that you think will make a checklist or procedure easier or better, tell your command control procedures trainer. He or she will pass it up to the NAF and eventually to HQ SAC/DOCCE. We always appreciate new ideas that make things work better. (Lt Col Charles R. Russell, DOCC)

DIRECTORATE OF MISSILES — COLONEL JOE L. CHURCH

MISSILE DATA INPUT. Initial design work on an improved data input device for Minuteman Weapon System computers is nearing completion. The new device will permit a mylar-to-magnetic conversion of the tapes currently used to input launch, execution, and related data into missile computers and result in improved alert readiness and security for the Minuteman forces. Full implementation is scheduled for 1981. (Lt Col Al Riner, DOMC)

ENLISTED CREW MEMBER/FACILITY MANAGER REPRESENTATIVE. TSgt Miguel Hernandez, AUTOVON 271-6091, serves as functional manager for these enlisted operations personnel. He is the focal point for matters concerning career progression, retraining, etc. (Lt Col Bill Orne, DOMM)

FACILITY MANAGER MANPOWER STUDY. A manpower study of the Facility Management Division at Minuteman units was initiated in Feb 79. The results of this measurement will be used to update the current manning standard formulated when the Facility Management Division was originally organized. (TSgt Hernandez, DOMM)

DIRECTORATE OF OPERATIONS — COLONEL GEORGE P. TYNAN

WINTEX 79. On 12 Mar, a SAC Advanced Echelon (ADVON) deployed to Europe to direct the simulated conventional employment of SAC forces in WINTEX/CIMEX 79. This year, for the first time, this NATO exercise was conducted in conjunction with POWER PLAY, the JCS-sponsored worldwide general war command post exercise. The SAC team remained overseas until exercise termination on 23 Mar. The ADVON was tailored specifically to the task at hand, consisted of 32 HQ SAC and 16 NAF, Air Division, and unit personnel. Elements were positioned at various NATO locations ranging from Norway in the North to Italy in the South. While SAC has previously participated in WINTEX, this was the first exercise in which an ADVON actually deployed to Europe. Although the deployment and employment of SAC forces were simulated, the working environment and procedures along with the subsequent lessons learned were real. SAC forces can contribute significantly to NATO's conventional defensive firepower and participation in exercises such as WINTEX is helping develop optimum methods of doing so. (Lt Col Richard Morganti, DOOC)

BUSY LUGGAGE. The 380 BMW will conduct a BUSY LUGGAGE flight test mission on 20 Jun 79. During the mission, the fourth of six missions planned for the CY 79 program, two inert test weapons will be released from low altitude on the Tonopah Test Range, Nevada. BUSY LUGGAGE, the exercise term for SAC participation in the Air Force/ Department of Energy (DOE) Joint Flight Test Program, is conducted on an annual basis. The program is designed to verify the capability of SAC's weapon systems to function in a variety of stockpile-to-target environments. Tests also verify the continuing compatibility between DOE and DOD subsystems. (Maj Rich Nelson, DOOV)

DIRECTORATE OF TRAINING — COLONEL JOHN J. DORAN, JR.

B-52 AIR WEAPONS TRAINING. With CCTS class 79-13, a new concept in air weapons training will begin. When members of this class report to their gaining units in Aug 79, the pilots and copilots will not have received their initial introduction to SAC's air weapons. Instead, they will be required to spend some 14-22 hours in a self-paced, all mediated air weapons class, overseen by the unit air weapons officer. This course will be essentially the same instruction that the B-52D pilots and copilots have received during CCTS training. The 4235th Strategic Training Squadron is currently producing the program for distribution to all bomb wings. Air weapons officers can expect to receive the program by Jul 79. The program consists of 27 modules, tape/slide and video tape presentations. It starts with the basics: security, SAC's air weapons publications and nuclear safety. The course then progresses to detailed instruction on the B-52 release system and the effects of nuclear weapons. A general discussion of the weapons in SAC's inventory is given, as well as a much more detailed description of the B28 FI and monitor and control functions associated with the weapons. The next change to SACM 51-52 will reflect this course and the necessary follow-on training that will be required. Watch for it! (Lt Col Walt Black, 4235 STS)

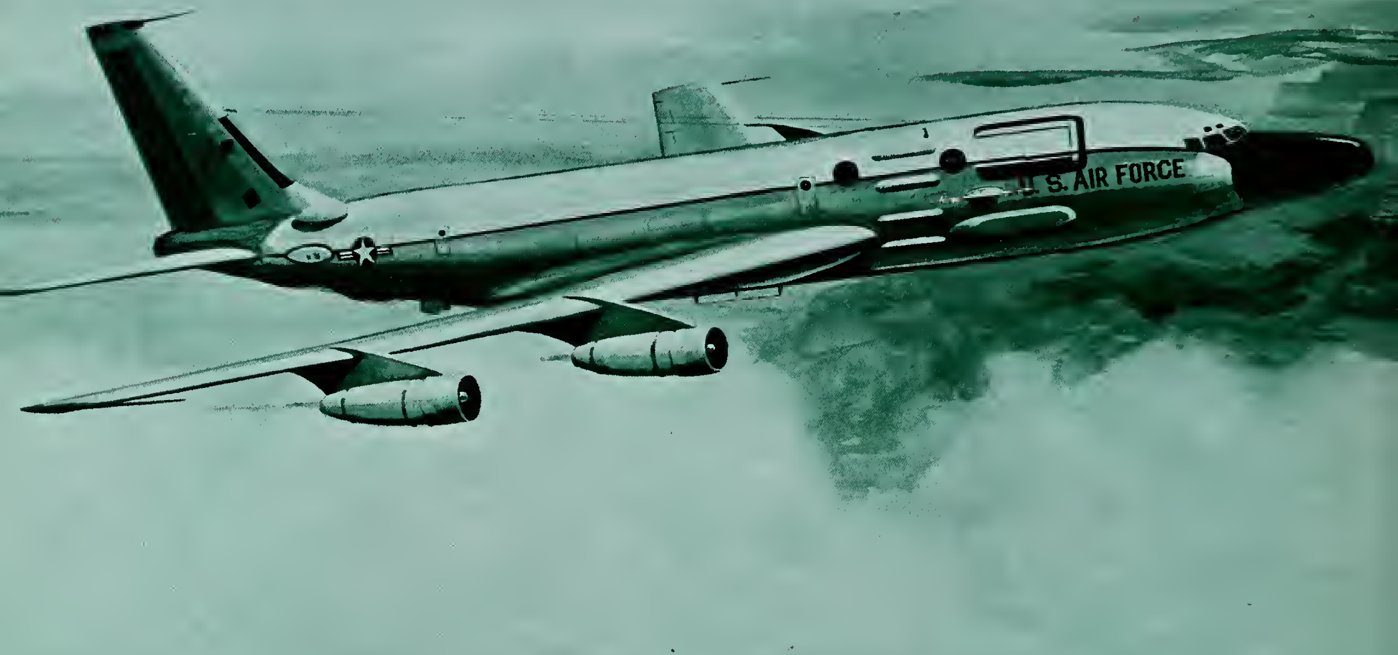
GIANT STRIKE IX. This month a SAC team will be in the United Kingdom participating in the 1979 RAF Strike Command Bombing Competition. B-52H crews from the 28 BMW, 319 BMW, and 410 BMW will operate from RAF Marham located 20 miles north of RAF Mildenhall. The SAC team will compete with RAF Vulcan bomber crews for the Blue Steel (individual crew) and Camrose (team bombing) trophies. Each crew will fly two low level bombing missions during the competition, 20-26 Jun. Awards will be presented at RAF Scampton on 28 Jun 79. (Lt Col Elmer Kunkle, DOTN)

LIFE SUPPORT CONFERENCE. Fifty-seven life support personnel met recently at Barksdale AFB, Louisiana, to review the command's life support program. SAC, ANG and AFRES unit personnel were joined by guests from Air Staff, Life Support SPO, Air Force Inspection and Safety Center, Life Support System Manager, ANG Bureau, HQ AFRES, HQ ATC, HQ MAC, and Chanute Technical Training Center. The main objectives of the conference were to review and improve SACR 55-51, "Strategic Air Command Aircrew Life Support Program," and to discuss manning, life support equipment research and development, logistics, formal AFSC 922XO schooling, chemical warfare defense equipment, aircrew training, and Air Force ejection safety statistics. (CMSgt J. N. Brown, DOTT)

LIFE SUPPORT CONFEREES

OPS UP DATE

DIRECTORATE OF STRATEGIC RECONNAISSANCE CENTER — COLONEL HARLON A. HAIN



STRATEGIC AIR RESCUE

On October 27, 1978, in response to blaring klaxons a reconnaissance crew ran to their awaiting RC-135. In less than twelve minutes another successful alert launch had been made from Shemya AFB, Alaska. As the aircraft climbed above Attu Island at the tip of the Aleutians, the crew completed checklist procedures they had followed a hundred times before. As the aircraft approached level off, reports were passed, equipment and instruments were checked, and the crew settled into the comfortable routine of flying another operational sortie.

Shortly after level off a message was received that changed the familiar routine into a hectic, risky, and extremely demanding adventure. The RC-135, nicknamed COBRA BALL, was diverted from its normal mission and directed to proceed to the last known position of a Navy P-3 Orion that had ditched in the North Pacific approximately 260 miles southwest of Shemya.

The COBRA BALL is a high altitude reconnaissance platform used for collecting short-lived intelligence data used in the Strategic Arms Limitations Talks. No one on board the aircraft had experience flying Search and Rescue Missions. There was no planning or briefing on what was to occur; however, the climax of that day's events might have been dreamt up in a Hollywood studio.

The first problem the crew encountered was to plan a successful and timely route to the ditching site. Careful planning of the route was extremely important to prevent accidental overflight of the Soviet-owned Komondorski Islands which lay between COBRA BALL and the ditching site. After successful navigation around Soviet airspace, the COBRA BALL was turned directly toward the ditching site.

The Aircraft Commander planned a descent to arrive over the site at an altitude of 1,000 feet. Since jet aircraft fuel consumption is higher at low altitudes, the less time spent at low altitude enroute to the site meant more time available for searching. Throughout the descent, altimeters were constantly cross-checked by both pilots and navigators as well as the Electronic Warfare Officer (EWO) crew members using the radar altimeter. Every man on board contributed to the effort as the aircraft descended toward the icy waters of the North Pacific. The same thought ran through each man's mind. Would they find the downed P-3 crew and would anyone survive the arctic waters in which they had crashed?

Survival in the arctic environment is filled with problems that anyone who flies from Shemya must be prepared to face. It's not only the year around 35°-38° water temperature but also the high winds which brings low chill factors and high seas. Low clouds are often present and whether in the form of snow, rain, hail, or freezing rain, the weather is always bad. These are the conditions that make the Aleutian Islands one of the most formidable flying environments in the world. During this October afternoon in the ditching area there was rain, fog, westerly winds of forty knots and waves running from 15 to 20 feet high.

As the COBRA BALL descended toward the crash coordinates everyone was relieved when the aircraft broke out of heavy clouds at 1,100 feet above sea level. The EWOs reported that the emergency locator beacon was becoming stronger. Everyone not needed to operate equipment manned a window. The aircraft began a right circular search pattern expanding outward from the crash site coordinates. Due to an inoperative autopilot and an inoperative right hydraulic system (with subsequent loss of the aircraft power rudder system), the aircraft commander chose to fly at a higher than normal maneuvering speed, with the flaps retracted. The slim chances of finding an aircraft or life raft on the gigantic stretches of ocean loomed in everyone's mind. As the minutes ticked off, the only encouraging sign was the continuing emergency beacon signal.

A Navy P-3 enroute to the site established radio contact and informed COBRA BALL that their ETA would be in 30 minutes and that the downed P-3 did not carry voice transmitting equipment in its survival kits. The visibility in the area was less than three miles and appeared to be getting worse. COBRA BALL continued its circular search. All eyes were straining through the mist. The prospects of finding survivors were getting bleaker and the crew's spirits began to sink. It was then that the copilot sighted a flare.

The sight of the flare from the raft was met with cheers throughout the COBRA BALL. Location of the survivors was passed around the world. The COBRA BALL is equipped with the Air Force Satellite Communication System (AFSATCOM) and agencies all the way up to JCS were informed "we've found them." AFSATCOM proved to be an invaluable communications tool and played a major part in the SAR effort. After that first flare was sighted a figure eight was flown around the site coordinates. The rafts were sighted on five passes, but poor visibility made it impossible to determine the number of survivors.

The crew directed the Navy P-3 to the survivors' coordinates. Once the P-3 established visual contact with the survivors, COBRA BALL climbed to altitude to conserve fuel and act as the on-scene coordinator. During the two hours after the P-3's arrival, COBRA BALL used its sophisticated communications equipment to keep the low level P-3 informed of other rescue efforts and of the pending arrival of a Coast Guard HC-130 from Kodiak. The Rescue Coordination Center (RCC) informed COBRA BALL of the location of a ship some 40 to 50 miles from the survivors. The crew was unable to make radio contact with the ship. RCC then asked COBRA BALL to go low level and fly across the bow of the ship. However, the fuel situation was becoming critical, and a refueling with a KC-135 tanker from Eielson AFB, would come first. The refueling would be complex since there were no published air refueling tracks, no TACAN and no radar targets available in the area. Still, the two SAC aircraft completed a successful rendezvous and refueling using a track of their own design. After refueling, the tanker returned to Eielson and the BALL returned to the survivors' location. It was now dark and the Coast Guard HC-130 was on scene. The HC-130 kept track of the survivors while the P-3 began searching for the surface vessel. The 15 men who had been aboard the downed P-3 had now been in the water for eight hours and, without contact, their number and physical condition was unknown. After several halting radio transmissions between the P-3 and the ship, the vessel altered its course in the direction of the ditching site. The reason for the difficulty in contact was soon evident. The vessel was a Russian fishing ship, the MVS Senyavina. High level communications had been going on between the US and the Soviet Union, and the Russian ship was awaiting instructions. As the Russians began moving toward the site, the three aircraft and the world awaited news of what the Russians would find.

The rest of the story was in the newspaper and on television the next day. Ten of the fifteen crew members survived. The Aircraft Commander was lost with the aircraft, another man was killed in the crash and three men died from exposure.

All of the SAC crew members involved in the SAR effort felt a profound sense of accomplishment. They also felt something else. They had a new sense of pride in themselves and confidence in their professional abilities. When the extra effort was needed, each man found himself tirelessly performing beyond his limits and without complaint. When a need arose on board the aircraft, someone stepped forward with initiative, skill, and imagination. Each performance flowed into one coordinated effort that resulted in the saving of ten lives.

RC-135 CREW MEMBERS:
Aircraft Commander — Capt Clifford B. Carter; Navigator #1 — Capt Bruce J. Savaglio; Electronic Warfare Officer Crew Commander — Capt Alan C. Feldkamp.

On the evening of 2 Apr 1979 a reception and dinner was held at Eielson AFB, AK. The guests of honor were the survivors of the Navy P-3 ditching. They were presented a briefing on COBRA BALL and introduced to the COBRA BALL aircrew responsible for their location and rescue from the cold, wind blown seas of the North Pacific. After the evening's formalities were concluded the aircrews relaxed in a casual atmosphere to exchange memories of that harrowing ordeal of 27 Oct 78.

ACE TOPICS

UNKNOWN TERRITORY

A flight manual generally takes a positive approach and tells you how the machine works and what it can do. Also, there is a short list of "cannot do's." The reason the "cannot" or "do not" list is so small is quite simple. If you acknowledge and abide by all the "can do's" you virtually eliminate the need to list the "do not do's."

For example, let's look at the T-38 fuel system and aircraft center of gravity (CG). The flight manual says that keeping the fuel systems within 200 pounds of each other will insure you do not exceed the aircraft CG limits. And that's about all it says. It doesn't go into much detail of what happens with various flap settings, airspeeds, and G loading at other possible CGs. There is no discussion of longitudinal stability, inverted pitch hangup, deep inverted stalls, divergence and resistance to gust loads. Why doesn't the flight manual talk about some of these? Simple, the assumption is if the aircraft were designed to be flown with various CGs, the flight manual would say so and tell you how.

When you start operating the machine outside the designed envelope, you could very well be treading on "unknown" territory. Some people do that for a living — like test pilots. But then they've got a lot more info than just a flight manual to work with. — Capt Seeley

GRAVITY FEED — PART II

Let's put this in perspective again. If you get a premature low level light, you must assume trapped fuel; go to gravity feed, continue to monitor the fuel, and plan for a possible early landing. There are many possible causes for trapped fuel. If gravity feed doesn't solve the problem, you're in deep serious. Now, back to the "nice to know" stuff.

The fuel levels given in the March issue of Combat Crew magazine are valid for the "worst case." It seems that the only way you can get this case is to run the engines on the ground with the aircraft level. The rate of fuel consumption will also affect the results. The more we vary the level, one G, zero acceleration, static condition, the higher the level of fuel in the fuselage tank when (1) the wing tanks are empty, and (2) the low level light comes on. Apparently, any jostling of the aircraft helps the flow. Those pilots that tried flying a local on gravity and didn't get an early light, sit down and relax. You proved what we found out this month was true. Was all that data wrong? No. There have been cases of premature low level lights caused by the relative vertical position of the fuselage tanks and wing tanks. The numbers quoted in the original article are valid. But you are not likely to experience that specific situation in flight.

So what does all this mean? First, no procedural changes are in order. Second, a premature low level light without a malfunction is very unlikely but is possible. Third, the widely held belief that the wing tanks are above the fuselage tank is wrong, and fourth, going to gravity feed will not necessarily cause fuel in the wing tanks to immediately fill the fuselage tank to the top. I think those things are worth knowing. — Capt Kirkwood

THE LEGACY OF THE TRIANGLE

(Continued from Page 7)

the aircrews. What makes the record even more impressive," adds Colonel Bill Mohr, Deputy Commander for Operations, "is that it was achieved under such a variety of conditions. We support the Pacific, Alaskan, and European Tanker Task Forces in addition to our normal bomber and tanker operations. It's to the aircrews' credit to have achieved this outstanding record while coping with diversified missions under a wide variety of climatological conditions. Each and every crewmember should be proud of his contribution."

Colonel Robert D. Larsen, the Deputy Commander for Maintenance, speaks of his people in glowing terms: "We feel that we have one of the finest maintenance organizations in the Air Force. Every member of the maintenance team is responsible for keeping the safety record intact. When you think of the number of sorties that have been flown in the past sixteen years, it is a remarkable tribute to the sustained excellence of the men and women in the maintenance organizations."

Major General John R. Spalding, Jr., Warner Robins Air Logistics Center Commander, views the 19th Bomb Wing's record this way: "The 19th BMW's position as a tenant unit on an AFLC base presents a unique situation — one that demands a great spirit of cooperation. We're proud of the 19th Bomb Wing's safety record and the support role we have been able to play. We intend to continue this important effort. The local SAC mission is vital to the nation and, therefore, important to us in the logistics business."

And so the death and mystery of the Bermuda Triangle lives on today. But the loss of those aircraft almost sixteen years ago, gave birth to a safety record rarely matched in aviation history. The legacy of the Triangle has given those who follow us a heritage of safety.

Maintenance Airman *of the Year*

TSgt Ronald R. Belshe, 55th FMS, Offutt AFB, has been named SAC Maintenance Airman of the Year and winner of the General Thomas S. Power Award for 1978. Outstanding technical and supervisory abilities, and sustained superior performance accounted for his selection. As NCOIC of the 55th FMS Propulsion Branch, TF33-P5 Engine Section, he implemented a rigorous training program with outstanding results. Engine pipeline time was reduced by 51% and test cell rejects were eliminated. The number of engine failures decreased from 1.39 to .54 per 1000 flying hours and system reliability was more than doubled. Sgt Belshe, constantly alert for improved methods and procedures, recently submitted 25 AFTO Forms 22 to improve technical data, all of which have been approved. He developed new procedures for engine turbine rotor repair which reduced the engine NMCS rate from 13.5 days to 2.2 days with substantial savings to the Air Force. Sgt Belshe was subsequently assigned as NCOIC of the Propulsion Branch Quality Assurance Section. In this capacity, he implemented controls which resulted in increased maintenance quality Not only were there no technical inspection unsatisfactory ratings by the Wing Quality Control Division, but 80% of the engines have been rated outstanding or excellent. Sgt Belshe is a dedicated noncommissioned officer and a valuable asset to the SAC maintenance function and the United States Air Force.

OPS HAZARDS

I'LL HUFF AND I'LL PUFF

A recent physiological incident emphasizes that several unrelated factors can combine to cause hyperventilation. The crewmember involved had not eaten breakfast the day of the flight. Lunch at 1100 hours was the only meal eaten prior to the incident which occurred about 2100 hours. Several equipment problems had been encountered requiring increased physical and mental activity. The crewmember had also been on 100% oxygen during takeoff and climbout and air refueling. In addition, the flight was a 60-4 evaluation.

During the flight the crewmember complained of being too hot when the rest of the crew was comfortable. The crew also noted this person's voice had a higher than normal pitch and the speaking rate was faster than usual. Finally, numbness and a tingling sensation in the hands and feet were felt as well as nausea. The evaluator noted the crewmember's fingers appeared cramped and terminated the evaluation. The evaluator had not noticed any fast or deeper than normal breathing during the mission. The mission was terminated and the crewmember was checked by the flight surgeon.

The contributing factors for this incident were a stressful situation (60-4 and equipment malfunction) coupled with improper diet, dehydration and a probable increased breathing rate. Each crewmember should take time to analyze his diet habits prior to flight and be especially aware of breathing rates during unusually stressful situations.

"GAWITSAWTINEREIFEELSODRYAN FUNKYICOODJISTFROWUPGAWITS AWTGOTINYMORWATER.....WHEW."

CHECK THE GAS AND FILL IT WITH OIL

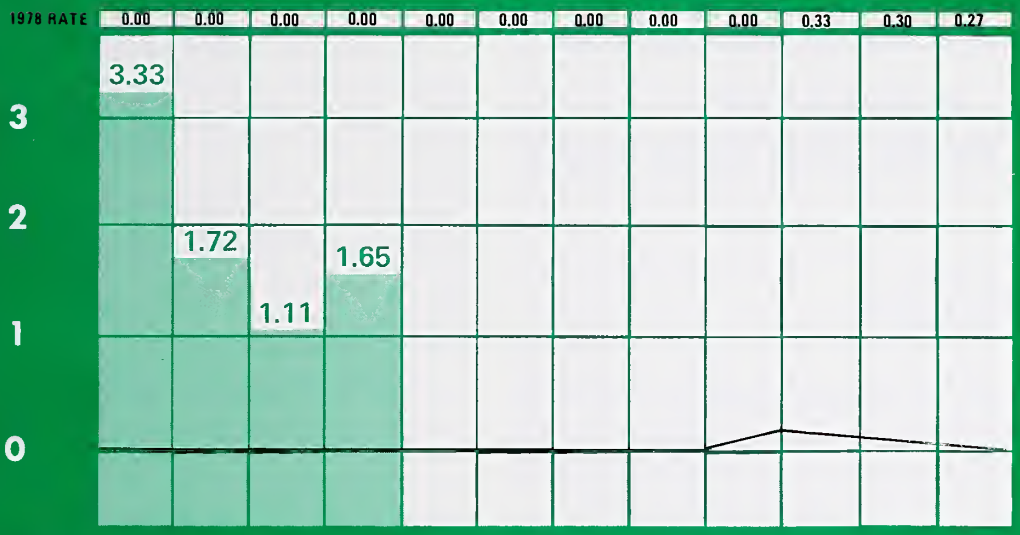
The FB-111 mission proceeded normally through the first portion of the low level when the oil-low caution light illuminated. The pilot also observed a decrease in oil quantity on number two engine. A climbout was made and the engine was shut down as the crew diverted to the nearest alternate airfield. An uneventful single engine landing was made.

The after landing inspection revealed that the number two engine oil filler cap had dislodged and departed during flight. The cap was found on the runway after the plane landed by the SOF. The oil tank was reserviced and checked and the aircraft flown back to the home base with no other problems.

Recommendations include not only should maintenance physically check the oil filler cap following servicing but aircrews as well should ascertain that the caps are secure.

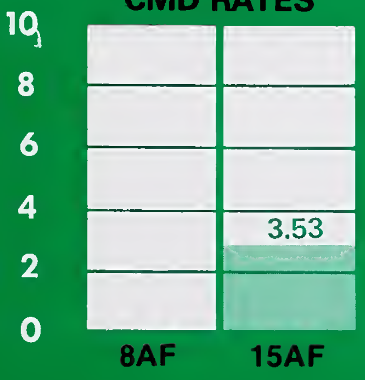
1979 Flying Safety Rate

SAC CLASS A MISHAP RATE (PER 100,000 FLYING HRS)



MISHAPS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1978	0	0	0	0	0	0	0	0	0	1	0	0
1979	1	0	0	1	0							

1979 SUBORDINATE CMD RATES



LEGEND ︿ =1978 RATE

MISHAP STATUS

B-52H	JAN 79
KC - 135Q	APR 79

BIG INSTRUMENT

B-52/KC-135
Descent Profile That Saves Petrol

Captain Tome H. Walters, Jr.
1st Combat Evaluation Group
Barksdale AFB, Louisiana

Recent events have reminded us again of the importance of fuel conservation. The challenge to each of us is to get a dollar's worth of training for every dollar of gas. With that thought in mind, let's look at the arrival phase of flight.

Is there an optimum descent profile for conserving fuel? Experience and logic both point to one: a high airspeed, idle power, clean configuration enroute descent. The September 1978 "Big Instrument" article covered enroute descents in detail. Here we'll focus on one technique — one that saves both time and fuel.

First, what are the variables in the fuel equation during a penetration? Basically, there are three: 1. The distance from start descent to the final approach gate, 2. The time it takes to travel that distance, and 3. The thrust setting.

The shortest distance is obviously a straight line from the end of cruise to the final approach gate. Since a high altitude initial approach fix seldom lies on that line, published penetrations are usually out of the way. There is a definite need to stay proficient in published penetrations, but that need certainly does not require flying one every flight.

The key question is when to start down. Too late is a problem. But too early means droning on at lower altitudes with a much higher fuel flow. We recommend a 3° descent gradient, or 300 feet per mile. If you were descending from FL 330 to 3,000 feet, you would divide 30,000 feet to lose by 300 feet per mile and come up with 100 miles.

A common technique used by the air carriers is 3 x flight level (or thousands of feet) + 10 miles. The 10 mile pad is to decelerate to 250 KIAS at 10,000 MSL. In our example, they would use 3 x 30 = 90 + 10 = 100 miles. The 10 mile pad is a good experience factor to use when slowing from the 330 KIAS area to 250 KIAS. This technique results in a greater than 3° descent gradient.

When should you start down? Try the 3° gradient for starters, then adjust to fit your needs.

The second variable in our fuel equation is time (think airspeed). What airspeed goes with that 3° gradient? The answer is, whatever it builds to. From experience, you should use 320 KIAS to 335 KIAS. That's probably higher than many of you are in the habit of using. Have you ever stopped to think why you picked your speed? Some pilots use 300 KIAS for a maximum — that seems fairly fast. 135 pilots have 270 KIAS in the back of their minds — max gear lowering speed. Some also consider 285 KIAS — the airspeed on which tanker enroute descent charts are based. B-52 types often use 240 KIAS — flight manual speed for a published penetration. And, others use 250 KIAS — the below 10,000 feet number. While all those speeds have a use, they actually make the enroute descent a problem. Our suggestion is to fly a computed descent gradient, accept the airspeed, and use drag if required to stay below limiting speeds. You're making good use of the old principle of trading altitude for airspeed when you accelerate to the 330 KIAS range. And you save quite a bit of time.

The final variable we offered was thrust setting. The desired is obviously idle, recognizing required pressurization settings on the way down. We'll mention drag here, since required thrust is a factor of aircraft configuration. The habit of lowering the gear at start descent is a carry-over from published penetration procedures. It's an expensive carry-over in terms of fuel. It makes no sense to drop the gear at 100 miles, level off at 40 miles out, and drone in with a high fuel flow. Use the gear, flaps, and boards to control speed and descent rates. Thoughtless use of drag devices eats up a tremendous amount of fuel.

The complete sequence of events in our example descent from FL 330 to 3,000 MSL would go like this:

1 — Begin descent 100 miles from the final approach gate for a 3° descent gradient.

2 — Accelerate to approximately 325 KIAS with power at (or near) idle. Target VVI at .77 mach for the 3° pitch change would be 2300 ft/min, initially.

3 — At 10,000 MSL, level and decelerate to 250 KIAS.

4 — Lower the gear and increase the descent rate as necessary to descend to your final approach fix altitude.

5 — Lower flaps and add power to arrive at the fix with the proper configuration and airspeed.

Approximately 207 B-52 and KC-135 SAC training sorties are flown per day. If only 500 pounds of fuel per sortie were saved using this or similar techniques, the daily total of fuel saved would be 103,500 pounds. The monthly savings would be 2,070,000 pounds and yearly 24,840,000 pounds. Obviously, the contribution toward fuel conservation that we as crew members can make can be quite significant.

PREPARING FOR THE UNEXPECTED

Capt Skip Brownyard
97th Air Refueling Sq, Blytheville AFB

WELL I'VE ANALYZED THE SITCHIATION AND IT LOOKS TO ME THAT AH....ER...

HEY GUYS!

FOOP

Ever since late in 1957 when the Soviets sent up the first man-made satellite known as Sputnik, the Soviets and Americans have been engaged in technological races. These races extend from arms and space to farming and general welfare. It is only natural with all these races going on that both countries also have explored the problem of training their pilots to act properly in unexpected situations. The studies, which have explored these areas are very interesting and provide aircrews with valuable information.

One such study recently conducted by the Soviets was entitled, *Psychology of Development of Special Performance Skills under Non-standard Flying Conditions.* The study addressed the problem of how to train a pilot to act quickly and effectively in a nonstandard situation. The reason psychological development was studied is a result of the Soviet view of action during an emergency. An emergency, in their view, demands a conscious mental effort directed toward finding signs, analyzing the situation, determining causes of the event, and choosing a strategy. They believe that by analyzing the various mental processes involved in the occurrences they will be able to actually teach pilots to cope with flight emergencies. Are these thoughts new?

A quick look at Section 3 in any of our Dash-One's will quickly refresh us with the USAF approach to nonstandard conditions. When faced with an emergency, the action called for is to maintain control of the airplane, analyze the situation, and take proper action. These actions are not too different from the Soviet view expressed earlier. These basics have never been argued. Where the argument begins is when we try to decide how we should train our pilots to prepare them to act in these nonstandard conditions. How do we better enable them to analyze the situation correctly and take the proper actions? Should we accomplish this training through the automation of skills or through the development of professionalism?

Automation of skills should definitely not be our choice. One of the results of improper action during nonstandard conditions stems directly from standardized types of thinking formed in the course of training with excessive automation of skills. Under normal flight conditions learned actions and flying skills are necessary and sufficient. However, during

(Continued on Page 30)

PROFESSIONAL PERFORMERS

Individuals selected for these pages as SAC's top professional performers of the month are chosen from nominations made by all SAC units. Selection is made only after all nominations have been carefully screened and those chosen meet the highest standards of excellence as outlined in SACR 127-2.

Crew S-223, 381 SMW, McConnell AFB, KS: Capt Don E. Hale, MCCC, 1Lt Thomas W. Hancock, DMCCC, TSgt Donald F. Ford, MSAT, and TSgt Ronald W. Perry, MFT.

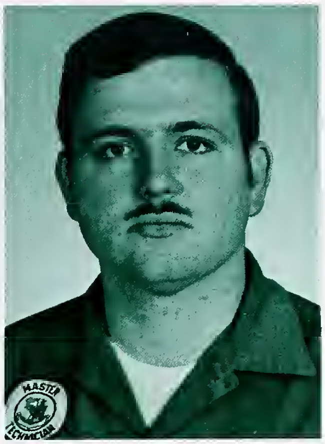
TITAN CREW

While on alert recently, Crew S-223 from the 381 SMW displayed superior weapon system knowledge as a potentially hazardous situation was successfully prevented. An oxidizer residual drain from a holding trailer into a pressurized transport trailer was discovered during a PTS operation. The crew, in conjunction with the PTS Team Chief, declared a safety stop in the operation. An error in the red line checklist of the TO 21M-LGM25C-2-12 was corrected which allowed the PTS operation to continue without further incident. The timely action taken by the crew and the PTS Team Chief quite possibly prevented a hazardous situation and damage to valuable Air Force equipment. During another alert, the crew experienced numerous power losses with the complex in post-attack. Crew S-223 expended great effort toward the achievement of power restoration, while experiencing heavy maintenance and the associated problems of the post-attack configuration. Efforts included replacing an open inspection plate cover which would have allowed diesel fumes to permeate the silo equipment area. Their superior weapon system knowledge saved sortie down time. Their actions during these two alerts earn Capt Don E. Hale, MCCC, 1Lt Thomas W. Hancock, DMCCC, TSgt Donald F. Ford, MSAT, and TSgt Ronald W. Perry, MFT, the Titan Crew of the Month honor.

Crew E-135, 351 SMW, Whiteman AFB, MO: 1Lt Brian L. Rutt, MCCC, and 1Lt Thomas L. Phelps, DMCCC.

MINUTEMAN CREW

First Lieutenants Brian L. Rutt and Thomas L. Phelps, Crew E-135 of the 351 SMW, showed exemplary proficiency during a particularly hectic alert tour. While monitoring extensive maintenance activity within the flight area, the crew was notified that a maintenance team chief at one of the launch facilities had been seriously injured while checking the integrity of hose fittings on the chromate tank. Due to an apparently loose fitting, chromate — a particularly corrosive and toxic substance — had spewed out onto the team chief's hands and eyes. Acting quickly, the crew directed that his eyes be flushed with water and that he be taken topside and kept warm. While Lt Phelps continued to gather further details from the other maintenance personnel regarding a possible "wet missile" hazard and to relay this information to Wing Job Control, Lt Rutt coordinated the prompt dispatch of an ambulance for the timely treatment and evacuation of the injured team chief. As a result of their professional reaction to this emergency, serious personnel injury and possibly costly equipment damage was averted.



MAINTENANCE AIRMAN

SSgt Delmar L. Ellis, 28th MMS, Ellsworth AFB, is SAC Maintenance Airman of the Month. As team chief of the SRAM Integrated Maintenance Facility Missile Checkout Shop, Sgt Ellis exhibited exceptional ingenuity. He submitted several suggestions which have resulted in improved procedures, increased safety, and significant monetary savings. He is actively involved in the section's training program and is the primary trainer on checkout and calibration of the SRAM radar set. While providing proficiency training in this area, he developed a radar set calibration kit which greatly facilitates the calibration of this equipment. Sgt Ellis is a dedicated noncommissioned officer and a valuable asset to the SAC maintenance function.

SAFETY MAN

MSgt Robert C. Bishop, 308th SMW, Little Rock AFB, is SAC Safety Man of the Month. As NCOIC of the ground safety function, MSgt Bishop made many improvements which contributed directly to safe operation of the mission. Through his initiative, the Wing Additional Duty Safety Officer/NCO Formal Training Course was developed and presented to all assigned additional duty personnel. This course directly resulted in an excellent rating for the ground safety function during the December 1978 SAC ORI/MET.

MSgt Bishop continually strives to improve his knowledge of all facets of safety. In addition to his normal, full time function as Ground Safety Technician, MSgt Bishop volunteered to participate in Nuclear and Missile Safety activities, inspections and training in order to enhance his effectiveness and overall value to the wing safety function. He is highly motivated and dedicated to safety and most deserving of recognition as the SAC Safety Man of the Month.

FLYING CREW

An outstanding job of coping with an outboard engine failure on takeoff was accomplished by a 2d Airborne Command Control Squadron crew on an early morning launch of the vital SAC Airborne Command Post (EC-135C) at Offutt AFB. As the landing gear locked up on the EC-135C a loud explosion was heard with a subsequent violent yaw of the aircraft to the right. A quick scan of the engine instruments by the crew confirmed loss of number four engine. The copilot cut off the throttle and pulled the fire switch as the IP continued climb to 3000 feet MSL. As the aircraft pitch was reduced for flap retraction, the right hydraulic system failed with subsequent loss of the power rudder. Flap retraction stopped at five degrees. Fuel dumping was initiated as an experienced battle staff member, from his vantage point at the aft scanning window, reported debris coming from the seized engine. Approach control vectored the crippled EC onto a 5000-foot MSL downwind and subsequently onto an extended final where considerable maneuvering was required to avoid numerous flocks of geese. As the approach was continued to the ILS final, control advised GCA was out of service. The aircraft continued on vectors until the runway was sighted. The flaps were extended electrically and a safe landing was made. Once the aircraft was stopped the crew and battle staff deplaned, boarded buses and proceeded to a spare aircraft in which they launched and completed their Airborne Command Post Sortie.

Crew E-113, 2ACCS, 55th SRW: IP Capt Carmen Auwarter, CP 1Lt Lyle Tingley, CP Capt Steve Mullvain, IN Capt Roger Wibbels, BO SSgt Robert Adams, FTS SSgt John McPhatter and Battle Staff Scanner TSgt Harold Williamson.

Subsequent inspection of the aircraft revealed massive failure of the number four engine turbine section and skin damage caused by shrapnel from the engine and from bird strikes during the approach phase. The crew's excellent knowledge of their aircraft and outstanding coordination of all on board resulted in the safe recovery of the aircraft.

DOUBLE STANDARD

(Continued from Page 14)

focuses on the crewmember and his performance. The critique by both the instructor and the evaluator should not only identify faults and weaknesses, but should also analyze performance errors and suggest ways and areas of improvement, as well as identify and praise superior efforts. As you can see the goals of instruction and evaluation are roughly the same. The main difference is that most evaluators can normally instruct only during the critique and instructors are almost always evaluating. Continuous evaluation of crewmembers is a characteristic of effective instruction. This does not mean evaluation in terms of any kind of grading criteria. Evaluation for an instructor should be focused on performance levels within established criteria. If the crewmember's performance is not up to the "standard," then the instructor must provide an alternative method for accomplishing the task, i.e., another technique. In this regard the instructor's mind turns into a "bag-of-tricks" from which hopefully, will come the solution to the crewmember's problem area. Evaluators, on the other hand, are duty bound to look to the grading maze for the answer. As stated earlier, the evaluator is encouraged to utilize the critique in an instructional manner. He has the opportunity, within the parameters of the critique, to provide the crewmembers with additional techniques to improve their performance. However, as a caution to evaluators, there is a definite risk of losing the evaluatee's attention if the grade he received was less than qualified. Therefore, as stated in SACR 50-6; "before presenting a problem seek a reasonable solution." Simply stated, provide your instruction first and the grade last.

For those of us who are neither instructors nor evaluators, there is a lesson to be learned. That lesson is self-inspection. Each of us knows, perhaps better than an evaluator or instructor, if what we are doing is meeting expected standards. If there is a need for improvement, get some advice on how to improve. Don't sluff off on the "nit noy" just because you don't have someone looking over your shoulder. This practice can be detrimental to your crew's performance and it can be detrimental to your getting another cluster on your longevity ribbon.

Most of the big boys feel that the longevity ribbon is the critical one and that all the others are gravy. We are all working towards the same goals. *FLY SAFE ALWAYS.* On each mission, we must strive for consistent levels of performance which insure mission effectiveness. By so doing, whether it's check day or not will be an academic issue. The bottom line will be pride in performance, professional attitude and avoidance of a double-standard.

PREPARING FOR THE UNEXPECTED

(Continued from Page 27)

our flying careers numerous repetition and refinements of these actions make them almost automatic. A fine example would be calling, "gear down," when turning base for a touch and go. After many years of this type of action, very little mental effort is expended to the point that even a positive visual monitoring of the gear handle in the down position may be overlooked. The result being an airplane damaged and possibly the loss of a crewmember. Why? Overautomation of actions is the cause. Too many actions are performed in this automatic fashion. What is the alternative? Professionalism. A professional is defined by Webster's dictionary as a person who is employed in a calling which requires specialized knowledge and often long and intensive academic training that they have received. What is needed is more of a professional attitude, whereby every action is savored. The automatic mode of operation doesn't make use of one's training to its fullest capacity.

The automatic mode of operation is hazardous. The reason it should be avoided is it doesn't prepare a crewmember to act properly in nonstandard conditions. In normal flight a person who acts in this manner will have few problems in accomplishing the mission. The automatic responses are a habit pattern providing a plan of action. However, when an emergency situation suddenly appears there is no longer a plan. To act in an emergency, the reliability of performance requires development of a specific mental skill in the pilot requiring a comprehension of what has happened and the necessary information to act properly. It doesn't do any good to act automatically for such action may in fact put the pilot in a worse condition. So what is the answer?

The Soviets in their psychology study feel the answer to actions in nonstandard conditions is the development of a skill. They feel this skill should not be a strict fixed automatic action. They also feel the skill should not be affected by stress. What then is the skill? They never say. This article hints that the answer is professionalism. In both instances you are given a nebulous answer. The reason for the nebulous answer is because the Soviets and Americans agree that the psychology behind the actions in emergency situations is what has to be dealt with. To deal with the psychology behind actions effectively is an individual's problem and that is where professionalism comes in. If you want to be prepared for the unexpected, you must make the commitment now. You must prepare by arming yourself with a professional attitude which makes you adhere to the old adage, "If it's worth doing, do it right." Professionalism will prepare you for the unexpected.

SAC Safety Screen

The SAC Safety Screen is an honor roll of SAC's most professional crews. To gain listing on the Screen, crew members must be nominated by their unit commanders and meet high selection criteria of experience in their aircraft or missile system *IAW SACR 127-2.*

410 BMW, K.I. Sawyer Crew S-102: AC Capt James J. Poland, CP 1Lt Richard R. Long, N Capt Randolph W. Gallas, BO Sgt Bernd D. Ekdahl.

410 BMW, K.I. Sawyer Crew E-17: AC Capt Richard M. Zimmerman, CP Capt Steven C. Nunn, RN Capt Ralph D. Vought, N 1Lt Charles R. Rathke, EWO Capt James A. Tompkins, G A1C Steven S. Maurer.

42 BMW, Loring Crew E-22: AC Capt Gary O. Green, CP 1Lt Howard E. Michel, RN Capt David A. Round, N 1Lt Kermit S. Phelps, EWO 1Lt Dennis E. Davis, G A1C William W. Wentworth.

42 BMW, Loring Crew R-106: AC Capt William D. Laster, CP 1Lt Kevin J. Stepko, N 1Lt Carl F. Roediger, BO SSgt Donald M. Fischer, Jr.

42 BWM Loring Crew S-151: AC Capt Ryan D. Paradis, CP Capt Dennis C. Hughes, N 1Lt Raymond A. Neall, Jr., BO MSgt Ernest R. Pubanz.

416 BMW, Griffiss Crew S-101: IP Capt Edward J. Holland, Jr., CP Capt Fredric C. Kurth, Jr., IN Capt Leonard W. Bryant, IBO MSgt Raymond E. Aguayo.

416 BMW, Griffiss Crew R-16: P Capt Oscar W. Johnston, CP Capt Douglas A. Boggie, NB Capt William K. Thacker, NN 1Lt Mark V. Viscanti, NE Capt Leonard A. Amohein, AG Sgt Dennis J. Smith.

340 AREFG, Altus Crew E-120: FP Capt David W. Ross, CP Capt Robert E. Kegley, NN 1Lt Stephen P. Marino, BO/IS SSgt Robert K. Hussong.

7 BMW, Carswell Crew E-08: P Capt Wayne Soliah, CP 1 Lt Arthur Billingslea, RN Capt John Corradetti, N Capt Dale Fink, IEW Capt Thomas Richey, IG Sgt Steven Boehm.

2 BMW, Barksdale Crew R-58: AC Capt Eric A. Anderson, CP Capt Stephen M. Cordio, RN Capt Burton S. Cook, NN 1Lt Richard G. Ruth, NE 1Lt Russel W. Kay, AG SSgt Mark E. Correll.

2 BMW, Barksdale Crew R-161: AC Capt Walter T. Costilow, CP 1Lt Donald K. McDonough, NN Capt Donald J. Raatz, BO SSgt Billy J. Gulley.

44 SMW, Ellsworth Crew R-152: MCCC 1 Lt Douglas M. Wuerl, DMCCC 2Lt William Colon, Jr.

90 SMW, F.E. Warren Crew S-211: MCCC Capt Eric C. Peterson, DMCCC 1Lt Brian E. Dieffenback.

91 SMW, Minot Crew E-021: MCCC Capt Howard W. Cummings, Jr., DMCCC 2Lt William E. Amerine.

308 SMW, Little Rock Crew R-020: MCCC Capt William P. Morgan, DMCCC 2Lt Gerrit J. Allen, MSAT A1C Stephen E. Sanders, MFT SrA Timothy Dinwiddie.

321 SMW, Grand Forks Crew E-113: MCCC 1Lt Scott E. Weaver, DMCCC 2Lt Paul K. Phelps.

341 SMW, Malmstrom Crew S-209: MCCC 1Lt Leonard M. Michelson, DMCCC 1Lt Louis E. Figueroa.

381 SMW, McConnell Crew R-184: MCCC 1Lt Gary R. Fales, DMCCC 2Lt Charles A. Francis, MSAT A1C John J. Earnest, MFT A1C James A. Fenton.

★U.S. Government Printing Office
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UNIVERSITY OF FLORIDA
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HALL OF FAME

TACTICAL FLYING

OVER TWENTY-THREE YEARS

170 AREFG, McGuire (NJANG)	Feb '56

OVER TWENTY-ONE YEARS

171 AREFW, Greater Pittsburgh (PAANG)	Mar '58

OVER TWENTY YEARS

157 AREFG, Pease (NHANG)	Jun '58
97 BMW, Blytheville	Aug '58
940 AREFG, Mather (USAFR)	May '59

OVER NINETEEN YEARS

307 AREFG, Travis	Sep '59

OVER EIGHTEEN YEARS

151 AREFG, Salt Lake City (UTANG)	Feb '61
161 AREFG, Sky Harbor (AZANG)	Apr '61
126 AREFW, Chicago O'Hare (ILANG)	Apr '61

OVER SEVENTEEN YEARS

134 AREFG, McGhee Tyson (TNANG)	Aug '61
340 AREFG, Altus	Feb '62

OVER SIXTEEN YEARS

301 AREFW, Rickenbacker	Jul '62
96 BMW, Dyess	Aug '62

OVER FIFTEEN YEARS

19 BMW, Robins	Aug '63

OVER FOURTEEN YEARS

160 AREFG, Rickenbacker (OHANG)	Dec '64

OVER THIRTEEN YEARS

320 BMW, Mather	Jul '65

OVER TWELVE YEARS

452 AREFW, March (USAFR)	Sep '66
92 BMW, Fairchild	Feb '67

OVER ELEVEN YEARS

55 SRW, Offutt	Jul '67
2 BMW, Barksdale	Aug '67

OVER TEN YEARS

5 BMW, Minot	Feb '69

OVER NINE YEARS

42 BMW, Loring	Sep '69
141 AREFW, Fairchild (WAANG)	Oct '69
28 BMW, Ellsworth	May '70

OVER SEVEN YEARS

7 BMW, Carswell	Mar '72
101 AREFW, Bangor (MEANG)	Mar '72
416 BMW, Griffis	May '72

OVER SIX YEARS

305 AREFW, Grissom	Aug '72
376 SW, Kadena	Nov '72
379 BMW, Wurtsmith	Apr '73

OVER FIVE YEARS

384 AREFW, McConnell	Mar '74
189 AREFG, Little Rock (ARANG)	May '74

OVER FOUR YEARS

43 SW. Andersen	Dec '74

ICBM

OVER FOURTEEN YEARS

90 SMW, F E Warren	Jul '64
1 STRAD, Vandenberg	Sep '64

OVER THIRTEEN YEARS

308 SMW, Little Rock	Aug '65

OVER NINE YEARS

341 SMW, Malmstrom	Apr '70

OVER FIVE YEARS

390 SMW, Davis-Monthan	Jul '73

OVER FOUR YEARS

351 SMW, Whiteman	Oct '74
91 SMW, Minot	Nov '74

To gain listing in the Hall of Fame, a SAC or ARF unit must be Class A mishap-free for 48 months.